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FRESH MARKET STAKE AND CAGE TOMATO TRIALS 1980

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John W. Scott, Gerald G. Myers, and Monica Wertz[1]

This is another report of a continuing series designed to evaluate currently used and new cultivars of tomatoes.

Stake Trial. Ten cultivars were grown with 3 replications and 40 others were grown in non-replicated observation plots. Spacing was 48 inches between rows and 18 inches between plants within rows. There were 15 plants per single row plot, equivalent to 7,260 plants per acre. Plants were pruned to 2 stems by allowing the first lateral below the first flower cluster to develop. All other laterals were removed to the sixth flower cluster.

Cage Trial. Thirty-two cultivars were grown on a black plastic mulch in non-replicated observation plots. There were 10 plants per plot spaced 60 inches between rows and 30 inches between plants within rows. This is the equivalent of 3,485 plants per acre. After planting, wire cages 30 inches high and 15 inches in diameter were placed over the plants. No pruning or training practices were carried out.

Cultural Practices. Seed was sown on April 4, 1980. Seedlings were transplanted to 2 1/4" cell packs on April 15 and field set on May 29. One thousand pounds per acre 15-15-15 were plowed down on April 23. At field planting, each plant received 1/2 pint of 10-52-8 starter solution at 3 lb. per 50 gal. Fifty lb/A 33.5-0-0, was sidedressed on June 20. Recommended rates of Enide and Vegiben were applied at planting and on June 20 respectively, for weed control. Irrigation was applied at a rate of 1" per week as needed.

Weather Data. Columbus University Farm Weather Station

	Mean Temperatures (^{o}F)			Precipitation	
Month	Max.	Min.	Avg.	Rain(inches)	Deviation from Normal
May 29-31	84.0	60.0	72.0	0.73	----
June	79.4	54.6	67.0	5.90	+1.95
July	84.7	63.4	74.0	5.63	+1.20
August	84.5	67.2	75.9	6.26	+3.40
September	78.6	57.9	68.3	1.86	-0.55

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1. Mailing address: Department of Horticulture, The Ohio State University, 2001 Fyffe Court, Columbus, Ohio 43210.

S-444/1/81-200

Code	Seed Source
A-1	Agway, Inc., Vegetable Seed Farm, Prospect, PA 16052
A-2	Asgrow Seed Co., Kalamazoo, Michigan 49003
B-1	George J. Ball, Inc., West Chicago, ILL 60185
B-2	W. Atlee Burpee Co., Philadelphia, PA 19132
C-1	A. L. Castle, Inc., P.O. Box 877, Morgan Hill, CA 95037
F-1	Ferry-Morse Seed Co., San Juan Bautista, CA 95045
G-1	Goldsmith Seeds, Inc., Gilroy, CA 95020
H-1	Joseph Harris Co., Rochester, N.Y. 14624
L-1	Lethermans Seed Co., Canton, OH 44707
N-1	Niagara, FMC Corp., Modesto, CA 95618
N-2	Northrup King & Co., P.O. Box 959, Minneapolis, MN 55440
O-1	Ohio State University, 2001 Fyffe Court, Columbus, OH 43210
P-1	Park Seed Wholesale, Inc., Greenwood, S.C. 29646
P-2	Peto Seed Co., Inc., Box 4206, Saticoy, CA 93003
S-1	Stokes Seeds, Inc., 737 Main St., Box 548, Buffalo, NY 14240
T-1	Otis S. Twilley Seed Co., Inc., P.O. Box 65, Trevose, PA 19047
V-1	Vaughan-Jacklin Corp., Downer's Grove, ILL 60515

Results and Discussion

Stake Trials. The first harvest was made on July 24 and the last on Sept. 18. Generally, yields were lower this year than last year due in part to weed competition and early blight both of which were worse than usual this year. Yield results of the replicated trial are in Table 1. There were a few rows in the stake trials which had poor growth that caused a lot of variation between replications for several varieties. This limited statistically significant differences between varieties and results should be interpreted with caution, since some varieties may have been hurt by the location of 1 of its replications.

Monte Carlo had good early yield, the best total yield (of replicated varieties), relatively good number 1 yield, and good fruit size. Supersonic B had good overall yield, the best number 1 yield, and good fruit size. Traveler, a pink fruited variety, had a good yield of number 1 fruit but fruit size was somewhat low.

As with the replicated trial, the observation trial results (Table 2) should be interpreted with some caution. Some varieties may have been in a poor location which would lower their performance. However varieties which performed well may have potential for Ohio and similar areas. Yields of some observation varieties were greater than the best yields in the replicated trial. From a yield standpoint the most promising varieties include: PSX 121375, PSR 25277, GS 244, GS 431, Park's Whopper VFNT, Basket Vee, and Ohio 6WRP. If tobacco mozaic virus (TMV) is a problem, growers might consider 6WRP or Park's Whopper. Limited seed of Ohio 6WRP will be available in 1981 for grower trials.

Cage Trial. The first harvest was on Aug. 1 and the last was on Sept. 18. Results are given in Table 3. The best yielding varieties include Pik Red, GS 238, GS 475 and Sunripe VFN.

Disease Resistance and Fruit Quality. All the varieties tested in both stake and cage trials were rated for various fruit defects and internal appearance. These results plus disease resistances are in Table 4. It is

suggested that the reader should note varieties of interest from a yield standpoint and then check Table 4 to see what disease resistance and quality ratings the varieties have. The varieties in Table 4 are listed in the same order as they appear in Tables 1 to 3. If a grower wants to test a new variety, it is suggested that a small amount be tested the first year to assess its performance under his conditions.

Table 1. Replicated Stake Trial: Yield, Grade, and Fruit Size of Tomato Cultivars, Columbus, Ohio 1980

Cultivar*	Seed Source	Early Harvest to August 6					Total Harvest to September 18				
		Marketable Yield (Tons/Acre)		Percent by Weight		Fruit Size (oz.)	Marketable Yield (Tons/Acre)		Percent by Weight		Fruit Size (oz.)
		No. 1	Total	No. 1	Culls		No. 1	Total	No. 1	Culls	
Early Girl	B-1	2.28	4.33	31	17	3.10	5.09	19.33	20	14	2.79
Monte Carlo	P-2	1.78	2.58	47	32	4.36	9.48	26.74	30	16	5.19
Floramerica	P-2	1.14	1.29	33	62	5.45	6.35	19.10	25	25	5.71
Jet Star	H-1	0.95	2.47	36	14	4.22	8.97	19.30	41	11	4.22
Better Boy VFN	B-1	0.71	1.10	92	47	4.81	7.15	19.80	30	14	5.02
Super Red	A-1	0.58	0.95	19	55	4.88	6.69	19.23	31	13	5.23
Supersonic B	H-1	0.40	1.14	21	39	3.98	11.34	20.63	46	14	5.11
Traveler	L-1	0.19	0.32	44	21	4.64	10.64	17.12	57	9	3.92
Burpee's Big Girl	B-2	0.15	0.57	15	51	7.95	7.95	19.66	33	10	5.66
Ramapo	V-1	0.00	0.12	0	77	2.00	9.07	16.87	47	13	5.67
LSD (5%)		N.S.	4.08			2.36	NS	NS			1.07

*Cultivars ranked in decreasing order of early yield of U.S. No. 1 grade fruits. Data based on mean of 3 replications.

Table 2. Observation Stake Trial: Yield, Grade and Fruit Size of Tomato Cultivars, Columbus, Ohio 1980

Cultivar*	Seed Source	Early Harvest to August 6					Total Harvest to September 18, 1980				
		Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)	Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)
		No. 1	Total	No. 1	Culls		No. 1	Culls	No. 1	Culls	
PSX 121375	P-2	5.30	6.32	66	21	5.42	26.38	34.07	68	12	5.81
PSR 25277	P-2	5.03	5.52	64	30	5.61	23.06	27.61	65	22	5.63
Better Girl	N-2	4.94	5.35	65	30	6.20	15.92	27.27	52	11	5.72
Park's Extra Early	P-1	3.39	5.23	56	14	3.84	11.51	30.25	35	8	3.53
Castlehy 105	C-1	2.47	2.57	83	17	6.80	14.30	23.11	53	14	5.31
XP 726	A-2	2.35	2.35	52	46	6.21	8.69	20.47	30	30	6.10
W2HF	H-1	2.32	2.78	72	14	4.49	14.76	23.64	60	4	4.54
Quinte (Easy Peel)	S-1	2.20	2.93	68	9	3.80	10.16	19.36	47	10	3.32
Basket Vee	S-1	2.15	2.95	56	24	3.98	19.67	28.80	60	13	4.61
GS 431	G-1	2.15	2.42	49	45	6.15	16.41	27.25	51	15	6.62
Earlirouge	S-1	2.06	2.98	46	33	3.71	7.31	15.49	34	28	3.39
XP 2041	A-2	1.82	3.94	32	32	5.43	7.02	15.05	36	22	4.85
Early Cascade	P-2	1.81	8.37	20	8	2.53	8.01	35.74	21	8	2.90
Castlex 1051	C-1	1.77	2.40	61	18	4.95	11.45	18.67	56	9	4.39
Super Fantastic VFN	B-1	1.62	2.54	29	54	3.91	9.58	28.51	27	20	5.69
GS 244	G-1	1.55	2.13	41	44	4.69	19.21	33.06	50	15	5.99
Duke	P-2	1.50	1.86	46	42	3.73	15.68	22.09	51	28	5.00
Exp. 4101	N-2	1.40	1.84	43	44	3.80	13.75	23.33	52	12	4.99
Roadside Red	A-1	1.16	1.60	36	50	4.40	7.96	18.97	36	14	4.59
Park's Whopper VFNT	P-1	1.16	1.38	40	52	3.38	13.84	31.31	37	16	6.33
Ultra Boy VFN	S-1	1.14	1.52	42	44	3.73	14.57	24.47	51	14	4.57
NCX 3050	N-1	1.09	1.33	49	40	5.87	6.82	11.47	47	22	5.58
XPH 674	A-2	.94	1.23	31	60	4.53	16.87	25.77	56	14	5.03
Ultra Girl VFN	S-1	.63	1.04	18	70	3.28	14.76	25.36	45	23	4.20
Ohio 10WRP-10	O-1	.58	1.11	36	31	2.73	4.62	13.70	29	13	2.30
NCX 3027	N-1	.58	.77	31	59	7.31	8.49	14.71	47	18	5.76
GS 430	G-1	.56	.56	51	49	.38	13.02	25.92	41	18	5.81
Ohio 6WRP	O-1	.48	.65	31	59	3.32	16.04	28.73	50	11	5.60
Easy Peel	P-1	.44	1.98	17	23	2.68	4.50	12.53	23	37	2.78
Pole King Hyb.	T-1	.39	.44	50	44	3.60	13.96	17.86	70	12	2.71
Tropic	A-2	.34	.44	23	71	4.11	8.20	20.42	32	21	6.02
City Best VF	P-1	.29	2.40	8	37	2.01	.63	3.03	13	38	1.71

(Observation Stake Trial)
- Pg. 2 - cont.

Cultivar*	Seed Source	Early Harvest to August 6					Total Harvest to September 18, 1980				
		Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)	Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)
		No. 1	Total	No. 1	Culls		No. 1	Culls	No. 1	Culls	
S-368	S-1	.19	.51	36	5	2.80	3.12	14.06	19	16	3.19
Ohio 9WRP	O-1	.17	.41	25	40	3.40	16.04	21.63	68	8	4.23
Walter	A-2	.17	.41	7	83	5.44	5.32	16.53	21	35	5.36
S-359	S-1	.10	.27	13	65	1.96	3.17	14.08	16	44	3.09
Ohio 10WRP-5	O-1	.10	.24	8	80	2.00	14.68	21.01	59	16	3.20
XPH 596	A-2	--	1.79	0	13	1.85	2.73	12.73	13	25	2.57
S-361	S-1	--	.02	--	96	1.60	6.00	14.64	29	29	4.61
8T2	B-2	--	--	0	100	--	3.78	15.80	17	29	10.55

*Cultivars ranked in decreasing order of early yield of U.S. No. 1 grade fruits.

Table 3. Observation Cage Trial: Yield, Grade and Fruit Size of Tomato Cultivars, Columbus, Ohio 1980

Cultivar*	Seed Source	Early Harvest to August 12					Total Harvest to September 18, 1980				
		Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)	Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)
		No. 1	Total	No. 1	Culls		No. 1	Total	No. 1	Culls	
Pik Red	H-1	8.30	12.00	64	7	6.98	14.32	22.79	58	7	6.14
GS 475	G-1	2.73	4.49	57	6	5.97	13.75	22.34	55	11	6.12
Veebright VF	S-1	2.53	4.02	56	11	3.96	13.75	19.82	59	15	3.92
GS 238	G-1	2.10	3.25	55	15	5.66	15.16	23.34	60	7	6.06
Jackpot	F-1	1.91	3.71	46	11	4.74	8.78	16.06	51	8	4.44
GS 589	G-1	1.84	3.15	40	31	7.97	14.50	20.34	63	11	6.15
Spring Giant Hyb.	B-2	1.74	2.89	49	18	5.56	6.27	10.96	46	20	4.12
Jetfire VF	S-1	1.61	6.06	24	10	5.67	5.79	13.97	31	25	5.18
GS 592	G-1	1.59	2.49	56	11	5.27	8.01	12.61	55	14	4.62
Market Hybrid #45	F-1	1.56	2.53	51	17	6.66	8.68	14.21	52	16	6.30
Setmore	H-1	1.54	3.40	44	2	5.04	10.63	24.76	40	6	4.95
Blazer	N-1	1.49	2.32	62	3	5.65	9.35	16.40	54	5	5.60
Sunripe VFN	B-1	1.25	3.48	36	3	5.76	15.16	27.34	48	13	5.19
Ottawa 78	S-1	1.22	1.59	72	7	2.53	7.90	16.65	42	12	3.73
Freedom VF	T-1	1.15	1.64	66	7	5.15	14.37	21.46	60	10	5.94
Ohio 3039-1	O-1	1.04	2.26	41	10	5.11	6.51	12.15	42	22	4.17
Market Hybrid #46	F-1	.99	1.97	40	21	5.19	9.08	24.40	32	14	6.27
Mainpak	H-1	.92	2.10	40	10	6.93	3.88	9.26	36	15	5.80
Veepick VF	S-1	.84	1.50	56	--	3.87	11.73	15.13	67	13	2.85
Hybrid 980	A-1	.74	1.86	32	21	4.36	8.29	21.30	33	14	3.93
Starshot	S-1	.68	2.00	25	28	1.80	1.41	5.65	18	27	2.08
Tempo	A-2	.57	1.34	42	2	4.80	4.50	10.55	35	17	4.95
Market Hybrid #53	F-1	.57	1.16	45	9	6.54	11.18	17.34	55	15	4.79
Ohio 3033-1	O-1	.56	.81	49	29	4.0	8.44	16.42	41	21	3.68
Swift	S-1	.46	1.95	17	29	1.80	.52	2.54	13	35	1.82
NCX 3050	N-1	.46	1.41	25	23	5.21	5.10	12.31	31	25	5.28
Market Hybrid #52	F-1	.37	1.34	27	35	6.40	5.22	12.36	37	13	5.08
Ohio 3108-1	O-1	.36	.87	32	22	2.95	11.98	17.58	63	8	4.20

(Cage Trial)
- Pg. 2 - cont.

Cultivar*	Seed Source	Early Harvest to August 12					Total Harvest to September 18, 1980				
		Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size (oz.)	Marketable Yield (Tons/Acre)		Percent by Weight		Fruit size Oz.)
		No. 1	Total	No. 1	Culls		No. 1	Yield	No. 1	Culls	
Ohio 3042-1	O-1	.32	.73	35	20	2.95	3.72	8.44	44	15	3.11
Burpees VF Tomato Hyb.	B-2	.28	.46	50	20	2.96	9.77	17.21	48	15	3.97
Ohio 3059-3	O-1	.26	.57	29	37	2.83	8.39	16.02	42	20	3.74
Walter	A-2	.06	.53	12	0	5.29	11.49	18.04	50	21	4.41

*Cultivars ranked in decreasing order of early yield of U.S. No. 1 grade fruits.

Table 4. Fruit Disease Resistance[1] and Quality[2] Ratings for Cultivars Tested in All Trials

Cultivar[3]	Disease Resistance	Persistent Green Shoulder[4]	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance[5]
Replicated Stake:									
Early Girl		5	5	5	5	5	5	2.5	3
Monte Carlo	F_1NV	4	4.5	4	4	4.5	4.5	3	3.5
Floramerica	F_{1+2}V	5	5	5	5	5	4	2.5	2.5
Jet Star	F_1V		5	4.5	4	5	4.5	4	3.5
Better Boy VFN	F_1NV	3	4.5	4.5	5	5	4	3	4
Super Red	F_1V	5	3.5	3.5	5	5	4	3.5	4
Supersonic B		5	4.5	4.5	4	5	5	5	4
Traveler		5	5	4	5	5	5	3	4
Burpee's Big Birl	F_1V	5	3.5	4	4	5	4	3	4
Ramapo	F_1V	5	5	4.5	5	5	5	5	4
Observation Stake:									
PSX 121375	F_{1+2}NTV	5	5	4	4	5	3	4	3.5
PSR 25277	F_{1+2}NTV	5	5	4.5	5	5	3.5	5	3
Better Girl	F_1NV	5	5	3.5	5	5	4	4	4
Park's Extra Early	F_1V	4	5	5	4.5	5	4.5	4	3
Castlehy 105	F_{1+2}SV	4	4	5	5	5	5	3	3.5
XP 726	$A_1F_1SV_1$	4	4	4	5	5	4.5	5	3.5
W2HF		4	5	4	5	5	5	3.5	2.5
Quinte (Easy Peel)			5	4	5	5	4	4	3
Basket Vee	F_1V		5	5	5	5	3	3	2.5
GS 431	A_1F_1T	4	5	4	5	5	5	4	4
Earlirouge	V		5	5	5	5	3	3.5	2
XP 2041	CF_{1+2}S	5	5	4.5	4	5	3	3.5	2.5
Early Cascade	F_1V	4	5	5	5	5	4.5	4	3
Castlex 1051	F_{1+2}NSV		5	5	5	4	5	4	3
Super Fantastic VFN	F_1NV	5	3	2	4	5	3.5	5	5
GS 244	A_1F_1NTV	4	4	4	5	4	5	5	4
Duke	F_{1+2}V	4	5	4	5	5	5	4	4
Exp. 4101	A_2E (tolerance to both)	5	5	4	4	4	5	4	3.5
Roadside Red	F_1V	5	5	5	4	5	5	3	3.5
Park's Whopper VFNT	F_1NTV	4	4	3	5	5	5	3	3
Ultra Boy VFN	F_1NV		4	4	5	5	4.5	4	4

Cultivar[3]	Disease Resistance	Persistent Green Shoulder[4]	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance[5]
Observation Stake: (cont.)									
NCX 3050	F_1NV		4	4	5	5	4.5	4	4
XPH 674	A_1F_{1+2}SV	4	4	3	5	5	4	3	2.5
Ultra Girl VFN	F_1NV		3	4	3	5	5	4	4
Ohio 10WRP-10	F_1T		4	5	5	5	5	3	2.5
NCX 3027	F_{1+2}V	5	5	5	5	5	4	2.5	2
GS 430	A_1F_1NTV	5	4	4.5	5	5	5	3.5	3
Ohio 6WRP	F_1T		5	4	5	4	5	4	4
Easy Peel			4	5	5	5	3.5	3	2.5
Pole King Hyb.	F_{1+2}V	5	5	3.5	5	5	5	4	4
Tropic	F_1SV	4	5	4.5	4	5	5	4	4
City Best VF	F_1V	Patio Tomato - No quality data taken.							
S-368	(NONE)	2	4	5	5	5	5	3	2.5
Ohio 9WRP	F_1T		4.5	4	5	5	5	4	4
Walter	CF_{1+2}S	5	4.5	5	4	5	5	3	3
S-359	(NONE)	2	3.5	5	5	5	4	3	3
Ohio 10WRP-5	F_1T		4.5	5	5	4	5	3.5	3.5
XPH-596	AN	4	5	5	5	5	4	4	2.5
S-361	(NONE)	4	3	4.5	5	5	5	4	3.5
8T2	F_1V	5	5	3.5	3	5	4	2.5	3
Pik Red	F_{1+2}V	4	4.5	3.5	5	5	5	4	4
GS 475	A_1F_{1+2}V	5	4	3	5	5	5	4	5
Veebright VF	F_1V		4	4.5	5	5	5	5	4
GS 238	F_1NV	5	5	2.5	5	5	4	4	5
Jackpot	F_{1+2}NV		5	3	5	5	3	3.5	3.5
GS 589	F_1NV	4	4.5	4	5	5	4	4	3.5
Spring Giant Hyb.	F_1V	5	4	4	5	5	4	3.5	3.5
Jetfire VF	F_1V		4	5	4.5	5	3.5	4	3
GS 592	F_1V	5	5	3	5	5	4	4	5
Market Hyb. #45	F_{1+2}V		4	1	5	5	4	3	3
Setmore		5	4	3	5	5	4.5	4	4
Blazer	F_{1+2}V (tolerant to S)		4.5	3.5	5	5	4.5	4	3.5
Sunripe VFN	F_1NV	5	5	3.5	5	5	4	4	4
Ottawa 78	V		5	4.5	5	5	4.5	3.5	3
Freedom VF	F_1V		5	3.5	5	5	4.5	3.5	4
Ohio 3039-1	F_1T		4	3.5	5	4.5	5	3.5	3

Disease Resistance and Quality
- Pg. 3 - cont.

Cultivar[3]	Disease Resistance	Persistent Green Shoulder[4]	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance[5]
Observation Stake: (cont.)									
Market Hyb. #46	F_1+_2V		3.5	1	5	5	5	2.5	3
Mainpak		5	5	2	5	5	4	5	5
Veepick VF	F_1V		5	5	5	5	3	2	2.5
Hybrid 980	F_1V	5	3	3.5	5	5	5	4	4
Starshot	V		5	4	5	4	5	2	2
Tempo		5	4	3	5	5	5	4	4
Market Hyb. #53	F_1V		4	4.5	5	5	4.5	4	3.5
Ohio 3033-1	F_1T		5	4.5	5	4	4	4	4
Swift	(NONE)		5	3	5	5	5	4	3
NCX 3050	F_1NV		4.5	3	5	4	4	3	3
Market Hyb. #52	F_1+_2V		4	3	5	5	3.5	3.5	4
Ohio 3108-1	F_1T		5	4	5	5	4.5	5	4
Ohio 3042-1	F_1T		5	4.5	5	3.5	5	3.5	3.5
Burpee's VF Tomato Hyb.	F_1V	5	5	4	5	5	5	4	4
Ohio 3059-3	F_1T		3	4.5	5	5	4.5	3.5	3.5
Walter	CF_1+_2S	5	5	4.5	5	4	4.5	4	4

[1]Disease Resistance Codes: A_1 = Alternaria Stem Canker, A_2 = Anthracnosa (tolerance), C = Cladosporinum Leaf Mold, E = Early Blight (tolerance), F_1 = Fusarium Wilt (race 1), F_2 = Fusarium Wilt (race 2), N = Root Knot Nematode, S = Stemphyllium, T = TMV, V = Verticillium

[2]Quality Ratings for all variables were made on a 1 to 5 scale where 5 indicates no problem and 1 is a severe problem.

[3]Cultivars are in the order they appear in Table 1 to 3.

[4]No rating means the cultivar has the uniform ripening gene (no dark green shoulder).

[5]Internal appearance is based on internal color, and wall thickness.

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